CLAIMS

1. A resin film which consists of thermoplastic polyester resin containing 3 to 30 percent by weight of a granular resin with a grain diameter of 0.1 to 5 μm in weight fraction in entire resin, said granular resin being modified polyolefin resin containing 2 to 20 percent by weight of a functional group derived from carboxylic acid in terms of carboxylic acid.

2. The resin film according to claim 1, wherein 3 to 25 percent by volume of modified polyolefin resin in volume fraction in entire resin is contained.

3. The resin film according to claim 1, wherein said thermoplastic polyester resin is polyester containing polyethylene terephthalate and/or isophthalic acid copolymerized polyethylene terephthalate as a main basic skeleton.

4. The resin film according to claim 1, wherein the ratio of terephthalic acid to isophthalic acid, which are dicarboxylic acid components constituting the thermoplastic polyester resin, is 97/3 to 85/15 in molar ratio.

5. The resin film according to claim 1, wherein in a monomer component mainly constituting the thermoplastic polyester resin, dicarboxylic acid is terephthalic acid, and diol components are

ethylene glycol and 1,4-butanediol, the ratio thereof being 1/4 to 4 in molar ratio.

6. The resin film according to claim 1, wherein the ratio X/Y of the amount X of polyester polymerization catalyst to the amount Y of oxidation inhibitor in the resin is 0.2 or higher in weight ratio.

7. The resin film according to claim 1, wherein the content of oxidation inhibitor in the resin is 500 ppm or lower.

8. The resin film according to claim 1, wherein 5 to 40 percent by weight of pigment is contained.

9. The resin film according to claim 1, wherein the thickness of film is 10 to 50 μm.

10. A resin film of two-layer construction in which a resin layer R1 consisting of the resin film as described in claim 1 and a polyester resin layer R0 containing polyethylene terephthalate and/or isophthalic acid copolymerized polyethylene terephthalate as a main basic skeleton are laminated.

11. The resin film according to claim 10, wherein the thickness of the resin layer R1 is 10 to 50 μm, the thickness of the resin layer R0 is 1 to 10 μm, and the thickness ratio of

the resin layer R1 to the resin layer R0 is 2 to 10.

12. The resin film according to claim 10, wherein 5 to 40 percent by weight of pigment is contained.

13. A resin film of two-layer construction in which a resin layer R1 consisting of the resin film as described in claim 1 and a resin layer R2 consisting mainly of modified polyolefin resin having a functional group derived from carboxylic acid are laminated.

14. The resin film according to claim 13, wherein the thickness of the resin layer R1 is 10 to 50 μm, the thickness of the resin layer R2 is 1 to 10 μm, and the thickness ratio of the resin layer R1 to the resin layer R2 is 1 to 20.

15. The resin film according to claim 13, wherein the modified polyolefin of the resin layer R2 contains 2 to 20 percent by weight of the functional group derived from carboxylic acid in terms of carboxylic acid.

16. The resin film according to claim 13, wherein 5 to 40 percent by weight of pigment is contained.

17. A resin film of three-layer construction in which a polyester resin layer R0 containing polyethylene terephthalate and/or isophthalic acid copolymerized polyethylene

terephthalate as a main basic skeleton is laminated on one surface of a resin layer R1 consisting of the resin film as described in claim 1, and a resin layer R2 consisting mainly of modified polyolefin resin having a functional group derived from carboxylic acid is laminated on the other surface of the resin layer R1.

18. The resin film according to claim 17, wherein the thickness of the resin layer R1 is 10 to 50 μm, thickness of the resin layer R0 is 1 to 10 μm, the thickness of the resin layer R2 is 1 to 10 μm, the thickness ratio of the resin layer R1 to the resin layer R0 is 1 to 20, and thickness ratio of the resin layer R1 to the resin layer R2 is 1 to 20.

19. The resin film according to claim 17, wherein the modified polyolefin resin of the resin layer R2 contains 2 to 20 percent by weight of the functional group derived from carboxylic acid in terms of carboxylic acid.

20. The resin film according to claim 17, wherein 5 to 40 percent by weight of pigment is contained.

21. A manufacturing method for a resin film, comprising a step of inserting the thermoplastic polyester resin containing 3 to 30 percent by weight of a granular resin with a grain diameter of 0.1 to 5 μm as described in claim 1 in an extruding machine as a raw material resin to melt it, and a step of forming a film

by extruding the molten resin from a T die.

22. A manufacturing method for a resin film, comprising a step of inserting the thermoplastic polyester resin containing 3 to 30 percent by weight of a granular resin with a grain diameter of 0.1 to 5 μm as described in claim 1 in an extruding machine as a raw material resin to melt it, a step of inserting a resin constituting the resin layer R0 as described in claim 10 in an extruding machine to melt it, and a step of forming a film of two-layer construction by extruding the molten resins of two types from one T die.

23. A manufacturing method for resin film, comprising a step of inserting the thermoplastic polyester resin containing 3 to 30 percent by weight of a granular resin with a grain diameter of 0.1 to 5 μm as described in claim 1 in an extruding machine as a raw material resin to melt it, a step of inserting a resin constituting the resin layer R2 as described in claim 13 in an extruding machine to melt it, and a step of forming a film of two-layer construction by extruding the molten resins of two types from one T die.

24. A manufacturing method for a resin film, comprising a step of inserting the thermoplastic polyester resin containing 3 to 30 percent by weight of a granular resin with a grain diameter of 0.1 to 5 μm as described in claim 1 in an extruding machine as a raw material resin to melt it, a step of inserting a resin

constituting the resin layer R0 as described in claim 17 in an extruding machine to melt it, a step of inserting a resin constituting the resin layer R2 as described in claim 17 in an extruding machine to melt it, and a step of forming a film of three-layer construction by extruding the molten resins of three types from one T die.

25. A resin laminated metal sheet in which at least one surface of a metal sheet is coated with the resin film as described in claim 1.

26. The resin laminated metal sheet according to claim 25, wherein the metal sheet is a steel sheet subjected to electrolytic chromate treatment, having a metallic chromium layer of 50 to 200 mg/m^2 and a chromium oxide layer of 3 to 30 mg/m^2 in terms of metallic chromium on the surface thereof.

27. The resin laminated metal sheet according to claim 25, wherein a plane orientation coefficient in the direction parallel to the film surface of the resin film is lower than 0.010.

28. The resin laminated metal sheet according to claim 25, wherein the resin film is formed by extruding the thermoplastic polyester resin containing 3 to 30 percent by weight of a granular resin with a grain diameter of 0.1 to 5 μm as described in claim 1 from a T die directly on the surface of metal sheet.

29. A resin laminated metal sheet in which at least one surface of a metal sheet is coated with the resin film as described in claim 10 so that the resin layer R1 is in contact with the metal sheet.

30. The resin laminated metal sheet according to claim 29, wherein a plane orientation coefficient in the direction parallel to the film surface of the resin film is lower than 0.010.

31. The resin laminated metal sheet according to claim 29, wherein the resin film is formed by extruding two types of resins of a resin constituting the resin layer R1 as described in claim 10 and a resin constituting the resin layer R0 as described in claim 10 simultaneously from one T die directly on the surface of metal sheet.

32. A resin laminated metal sheet in which at least one surface of a metal sheet is coated with the resin film as described in claim 13 so that the resin layer R2 is in contact with the metal sheet.

33. The resin laminated metal sheet according to claim 32, wherein a plane orientation coefficient in the direction parallel to the film surface of the resin film is lower than 0.010.

34. The resin laminated metal sheet according to claim 32, wherein the resin film is formed by extruding two types of resins

of a resin constituting the resin layer R1 as described in claim 13 and a resin constituting the resin layer R2 as described in claim 13 simultaneously from one T die directly on the surface of metal sheet.

35. A resin laminated metal sheet in which at least one surface of a metal sheet is coated with the resin film as described in claim 17 so that the resin layer R2 is in contact with the metal sheet.

36. The resin laminated metal sheet according to claim 35, wherein a plane orientation coefficient in the direction parallel to the film surface of the resin film is lower than 0.010.

37. The resin laminated metal sheet according to claim 35, wherein the resin film is formed by extruding three types of resins of a resin constituting the resin layer R1 as described in claim 17, a resin constituting the resin layer R0 as described in claim 17, and a resin constituting the resin layer R2 as described in claim 17 simultaneously from one T die directly on the surface of metal sheet.

38. A manufacturing method for a resin laminated metal sheet, comprising a step of heating a metal sheet to a temperature in the range of the melting point of the thermoplastic polyester resin containing 3 to 30 percent by weight of a granular resin with a grain diameter of 0.1 to 5 μm as described in claim 1 minus

70℃ to the melting point thereof plus 30℃, and a step of laminating the resin film as described in claim 1 to the heated metal sheet.

39. A manufacturing method for a resin laminated metal sheet, comprising a step of heating thermoplastic polyester resin containing 3 to 30 percent by weight of a granular resin with a grain diameter of 0.1 to 5 μm as described in claim 1 to a temperature in the range of the melting point of the thermoplastic polyester resin plus 10℃ to the melting point thereof plus 50℃ to melt it, and a step of laminating the melted thermoplastic polyester resin by directly extruding it on the surface of a metal sheet.

40. A manufacturing method for a resin laminated metal sheet, comprising a step of mixing 3 to 30 percent by weight of a granular resin with a grain diameter of 0.1 to 5 μm as described in claim 1 in thermoplastic polyester resin, a step of inserting the mixed resin in an extruding machine to melt it, and a step of laminating the molten resin by directly extruding it on the surface of a metal sheet.

41. A manufacturing method for a resin laminated metal sheet, comprising a step of heating a metal sheet to a temperature in the range of the melting point of thermoplastic polyester resin constituting the resin layer R1 as described in claim 13 minus 70℃ to the melting point thereof plus 30℃, and a step of

laminating the resin film as described in claim 10 to the heated metal sheet.

42. A manufacturing method for a resin laminated metal sheet, comprising a step of heating a resin constituting the resin layer R1 as described in claim 10 and a resin constituting the resin layer R0 as described in claim 10 to a temperature in the range of the melting point of thermoplastic polyester resin of the resin layer R1 plus 10℃ to the melting point thereof plus 50℃ to melt it, and a step of extrusion laminating the two types of melted resins in two layers on the surface of a metal sheet.

43. The manufacturing method for a resin laminated metal sheet according to claim 42, wherein the resin constituting the resin layer R1 as described in claim 10 and the resin constituting the resin layer R0 as described in claim 10 are inserted in separate extruding machines and are melted.

44. A manufacturing method for a resin laminated metal sheet, comprising a step of heating a metal sheet to a temperature in the range of the melting point of thermoplastic polyester resin constituting the resin layer R1 as described in claim 13 minus 70℃ to the melting point thereof plus 30℃, and a step of laminating the resin film as described in claim 13 to the heated metal sheet.

45. A manufacturing method for a resin laminated metal

sheet, comprising a step of heating a resin constituting the resin layer R1 as described in claim 13 and a resin constituting the resin layer R2 as described in claim 13 to a temperature in the range of the melting point of thermoplastic polyester resin of the resin layer R1 plus 10℃ to the melting point thereof plus 50℃ to melt it, and a step of extrusion laminating the two types of melted resins in two layers on the surface of a metal sheet.

46. The manufacturing method for a resin laminated metal sheet according to claim 45, wherein the resin constituting the resin layer R1 as described in claim 13 and the resin constituting the resin layer R2 as described in claim 13 are inserted in separate extruding machines and are melted.

47. A manufacturing method for a resin laminated metal sheet, comprising a step of heating a metal sheet to a temperature in the range of the melting point of thermoplastic polyester resin constituting the resin layer R1 as described in claim 17 minus 70℃ to the melting point thereof plus 30℃, and a step of laminating the resin film as described in claim 17 to the heated metal sheet.

48. A manufacturing method for a resin laminated metal sheet, comprising a step of heating a resin constituting the resin layer R1 as described in claim 17, a resin constituting the resin layer R0 as described in claim 17, and a resin constituting the resin layer R2 as described in claim 17 to a temperature in the

range of the melting point of thermoplastic polyester resin of the resin layer R1 plus 10℃ to the melting point thereof plus 50℃ to melt it, and a step of extrusion laminating the three types of melted resins in three layers on the surface of a metal sheet.

49. The manufacturing method for a resin laminated metal sheet according to claim 48, wherein the resin constituting the resin layer R1 as described in claim 17, the resin constituting the resin layer R0 as described in claim 17, and the resin constituting the resin layer R2 as described in claim 17 are inserted in separate extruding machines and are melted.